

Applicant : Ronald P. Knockeart et al.
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Filed : September 5, 2003
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Attorney Docket: 09650-005008 / 2003P11514US

REMARKS

Below, the applicant's comments are preceded by related remarks of the examiner set forth in small bold type.

Rejections under 35 U.S.C. 112

Claims 22 and 24-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear how an off-route condition or deviation from a planned route is detected from two independent, estimated positions. The comparison of the two estimated positions would appear merely to indicate that the two estimates do not coincide and that one may be selected as the new estimate of position or the two can be combined to estimate the new position. If (X_{GPS}, Y_{GPS}) represents the first estimated position, (X_0, Y_0) represents the first point along a route, d represents a distance traveled, and $[(X_0, Y_0) + d]$ represents the second estimated position, how does the function $(X_{GPS}, Y_{GPS}) - [(X_0, Y_0) + d]$ indicate a deviation from the planned route or off route condition? Does the comparison merely indicate that the first position estimate deviates from the second position estimate wherein the second estimate, due to its association with the planned route, meet the terminology of deviating from the planned route/off-route condition?

The Applicant does not agree that the claims are indefinite. The Examiner states that it is not clear "how" certain steps are performed. Introducing further limitations into the claim is not necessary to meet the requirements of 35 U.S.C. 112. Furthermore, the Applicant does not accept the Examiner's characterization of the claims. Also, the Examiner's terminology " $[(X_0, Y_0) + d]$ " is not clear. For example, it is not clear whether the Examiner's quantity " d " is meant to correspond to a vector.

The invention of claim 22 provides a method for detecting when a vehicle deviates from a planned route according to a difference between a first estimated position of a vehicle tracked using signals from a positioning system, such as GPS, and a second estimated position determined according to a position along the planned route. In an embodiment described in the specification at page 51, line 18 to page 52, line 24, the second estimated position is determined based on a first point on the planned route and an estimated distance traveled by the vehicle after

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detecting the vehicle is at the first point. The estimated distance can be determined by, e.g., a dead reckoning procedure. Note that the "estimated distance" is a scalar value, and the method assumes that the vehicle is properly following the planned route in determining the second estimated position. The second estimated position represents where the vehicle would be if the vehicle had been traveling along the planned route for the estimated distance. If the vehicle is truly following the planned route, then the first and second estimates positions should remain close to one another. Thus, if the first estimated position and the second estimated position differ by at least a tolerance distance, it can be inferred that the vehicle has deviated from the planned route.

Rejections under 35 U.S.C. 102(b)

Claims 22 and 24-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Seymour.

Seymour discloses a first position sensory system in the form of GPS (305) for providing a first trend of position vectors, a second position sensory system in the form of a dead-reckoning system (307 and 309), and a computer (301) for comparing the first trend of position vectors and the second trend of position vectors to a trend of position vectors based on a map reference (303).

The dead-reckoning system includes measuring a distance and direction with respect to a first point along a route, i.e. the presumed starting point. Thus, Seymour discloses the claimed (1) tracking a first estimated position using signals from a global positioning system that are received at a vehicle, (2) tracking a second estimated position using an estimate of distance, and additionally direction, from a first point along the route, and (3) detecting a deviation using a predetermined criteria by comparing the first position and the second position with a reference position vector initially determined from at least one of the first position vector, second position vector or map database position vector. Thus, the comparison of the first position vector and the reference position vector determined from the second position vector meet the scope of the comparison and the result detects a deviation there between. In view of the fact that it is taught that the position uncertainty of the second position sensory system, i.e. dead-reckoning, increase during operation, and the statistical or heuristic method may be applied to define the trends, the adjustment of the tolerance is deemed to be anticipated.

The amendment to the claims merely clarifies the second position sensing system which is met by a dead-reckoning system. Seymour is deemed to disclose tracking first and second estimates of position and comparing the results to make a determination of on/off route conditions.

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The Examiner has withdrawn previous rejections under 35 U.S.C. 102(e) over Nimura and over Jones, and has now rejected the claims over a newly cited reference, Seymour (U.S. Pat. 5,488,559).

Seymour does not disclose or suggest "wherein tracking the second estimated position includes detecting when the vehicle is at the first point on the planned route, estimating a distance traveled after detecting the vehicle is at the first point, and determining the second estimated position according to a position along the planned route at the estimated distance on the path following the first point," as recited in claim 22. Claim 22 requires that the second estimated position is determined "according to a position along the planned route at the estimated distance on the path following the first point" (emphasis added). For example, the second estimated position can represent where the vehicle would be if the vehicle had been traveling along the planned route for the estimated distance.

While Seymour may disclose comparing two estimated positions, neither of the two estimated positions is determined "according to a position along the planned route at the estimated distance on the path following the first point," as recited in claim 22. Seymour determines an estimated position based on both distance and heading of the vehicle as measured by the dead-reckoning system (see col. 2, line 66 to col. 3, line 3 and col. 3, lines 25-35 of Seymour). The position estimates provided by the dead-reckoning system do not necessarily follow a planned route. As shown in FIG. 1 of Seymour, "a series of circular icons 108, 109, 111, 113, 115, 117, 119, and 122 represents a portion of the position vectors provided by a dead-reckoning sensory system associated with the traversing vehicle. ... The dead-reckoning positioning system indicates that the vehicle is positioned somewhere beyond the service road 126 but not specifically on any mapped road," (col. 3, lines 32-35 and lines 56-60).

Seymour discloses updating reference position vectors (col. 8, lines 16-36), but the reference position vectors are not determined "according to a position along the planned route at the estimated distance on the path following the first point." An equation for updating the reference point vectors is provided in col. 8, lines 25-35. As shown in FIG. 2 of Seymour, many

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of the reference position vectors (represented by rectangular icons, including 205, 213, 219, 227, 233, 239, 243, 246, 249, 253, and 255), are not positioned along the road segments, whose endpoint locations are represented by star icons (which include 209, 223, 237, and 298).

Claims 24-29 are patentable for at least the same reasons as claim 22.

Finality of office action

The Examiner states "Applicant's amendments necessitated the new ground(s) of rejection." Yet the Examiner also states "The amendments to the claims merely clarifies the second position sensing system which is met by a dead-reckoning system." Therefore it is clear that the amendment did not indeed necessitate the further search for the new reference over which the claims were rejected, and the finality of the office action should be withdrawn.

Any circumstance in which the applicant has addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner. Any circumstance in which the applicant has made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims.

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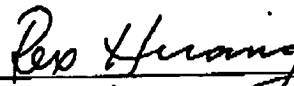
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Respectfully submitted,

Date: _____

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** See attached document certifying that Rex Huang has limited recognition to practice before the U.S. Patent and Trademark Office under 37 CFR § 10.9(b).*

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Expires: January 1, 2005



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Director of Enrollment and Discipline